

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE ON

In re the Application of:

Naomasa SHIRAISHI

Appln. No.:

Filed: HERewith

For: PROJECTION EXPOSURE APPARATUS

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicant wishes to make of record the documents cited in predecessor Application Nos. 10/202,007 filed July 25, 2002, 09/246,853 filed February 9, 1999, 08/549,325 filed October 27, 1995, 08/371,895 filed January 12, 1995, and 07/942,193 filed September 9, 1992, whether cited by Applicant or by the Patent Office. The documents are listed on the attached Forms PTO-1449.

Applicant's Japanese Representative has provided the attached comments regarding the relevance of Documents AM-AO (page 13 of 14).

Respectfully submitted,

By: Nelson H. Shapiro
Nelson H. Shapiro
Reg. No. 17,095

NHS:lmb

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January 20, 2004

FORM PTO-1449				Atty. Docket No. XA-7431L		Appln. No.	
<u>LIST OF DOCUMENTS CITED BY APPLICANT</u>							
				Applicant Naomasa Shiraishi et al.			
				Filing Date HEREWITH		Group	
U.S. PATENT DOCUMENTS							
Examiner Initial		Document Number	Date	Name	Class	Sub-class	Filing Date
	AA	3,492,635	1/27/70	Farr	340	15.5	
	AB	3,630,598	12/28/71	Little, Jr.	350	157	
	AC	3,639,039	2/1/72	Rhodes, Jr.	350	162	
	AD	3,658,420	4/25/72	Axelrod	356	71	
	AE	3,729,252	4/24/73	Nelson	350	162	
	AF	3,770,340	11/6/73	Cronin et al.	350	162	
	AG	3,776,633	12/4/73	Frosch et al.	355	132	
	AH	4,132,479	1/2/79	Dubroecq et al.	355	71	
	AI	4,207,370	6/10/80	Liu	428	204	
	AJ	4,291,938	9/29/81	Wagner	350	91	
	AK	4,472,023	9/18/84	Yamamoto	350	162.11	
	AL	4,739,373	4/19/88	Nishi et al.	355	53	
	AM	4,749,278	6/7/88	van der Werf	356	401	
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Examiner Initial		Document Number	Date	Country	Class	Sub-class	Translation
	AN	0 346 844	12/20/89	EPO			
	AO	0 352 975	1/31/90	EPO			
	AP	59-83165	5/14/84	JAPAN			abstract
	AQ	61-41150	2/27/86	JAPAN			abstract
	AR	2-50417	2/20/90	JAPAN			abstract
	AS	2-48090	10/24/90	JAPAN			abstract
OTHER (including author, title, date, pertinent pages, etc.)							
	AT	"Extended Focal Depth Optical Microlithography", IBM Technical Disclosure Bulletin, Vol. 32, June 1989, pp 125-127.					
	AU	Delmer L. Fehrs et al., "Illuminator Modification of an Optical Aligner", <u>KTI Microelectronics Seminar</u> , Nov. 6-7, 1989, pp. 217-230.					
	AV	David J. Cronin et al., "Dynamic Coherent Optical System", <u>Optical Engineering</u> , March/April 1973, Vol. 12, pp. 50-55.					
Examiner				Date Considered			
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	AA*	4,778,275	10/18/88	van den Brink et al.	356	401	
	AB*	4,780,749	10/25/88	Schulman	357	12	
	AC*	4,789,222	12/6/88	Ota et al.	350	167	
	AD*	4,814,829	3/21/89	Kosugi et al.	355	43	
	AE*	4,828,392	5/9/89	Nomura et al.	356	401	
	AF*	4,841,341	6/20/89	Ogawa et al.	355	43	
	AG*	4,851,882	7/25/89	Takahashi et al.	355	46	
	AH*	4,853,756	8/1/89	Matsuki	355	71	
	AI*	4,854,669	8/8/89	Birnbach et al.	350	162.12	
	AJ*	4,931,830	6/5/90	Suwa et al.	355	71	
	AK*	4,947,413	8/7/90	Jewell et al.	378	34	
	AL*	4,970,546	11/13/90	Suzuki et al.	355	53	
	AM*	4,988,188	1/29/91	Ohta	353	122	
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	AT*	Victor Pol et al., "Excimer laser based lithography: a deep-ultraviolet wafer stepper for VLSI processing", <u>Optical Engineering</u> , Vol. 26, April 1987, pp. 311-318.					
	AU*	D. H. Barry, "Pattern recognition automatic fine alignment", <u>SPIE</u> , Vol. 334, 1982, pp. 10-16.					
	AV*	S. T. Yang et al., "Effect of central obscuration on image formation in projection lithography", <u>SPIE</u> , Vol. 1264, 1990, pp. 477-485.					
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	AA^	4,992,825	2/12/91	Fukuda et al.	355	53	
	AB^	5,004,348	4/2/91	Magome	356	401	
	AC^	5,091,744	2/25/92	Omata	355	53	
	AD^	5,121,160	6/9/92	Sano et al.	355	53	
	AE^	5,153,419	10/6/92	Takahashi	250	201.1	
	AF^	5,191,374	3/2/93	Hazama et al.	355	43	
	AG^	5,208,629	5/4/93	Matsuo et al.	355	53	
	AH^	5,237,367	8/17/93	Kudo	355	67	
	AI^	5,245,384	9/14/93	Mori	355	67	
	AJ^	5,264,898	11/23/93	Kamon et al.	355	67	
	AK^	5,286,963	2/15/94	Torigoe	250	201.2	
	AL^	5,309,198	5/3/94	Nakagawa	355	67	
	AM^	5,329,336	7/12/94	Hirano et al.	355	53	
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	AS^	Naomasa Shiraishi et al., "Optical/Laser Microlithography V", SPIE- The International Society for Optical Engineering, Vol. 1674, March 11-13 1992, pp. 741-752.					
	AT^	George O. Reynolds, "A Concept for a High Resolution Optical Lithographic System for Producing One-Half Micron Linewidths", SPIE, Vol. 633, 1986, pp. 228-238.					
	AU^	A. Szegvári, "On the use of an Illumination azimuth diaphragm during coaxial dark field illumination", January 28, 1923, pp. 1-11.					
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	AA#	5,337,097	8/9/94	Suzuki et al.	353	101	
	AB#	5,392,094	2/21/95	Kudo	355	67	
	AC#	5,440,426	8/8/95	Sandstrom	359	559	
	AD#	5,446,587	8/29/95	Kang et al.	359	562	
	AE#	5,673,102	9/30/97	Suzuki et al.	355	53	
	AF#	Re 34,634	6/7/94	Konno et al.	362	268	
	AG#	5,586,170	11/94	Muraki	355	67	
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	AT#	George Needham, "The Practical Use of The Microscope Including Photomicrography", 1958, pp. 315-327 and 97					
	AU#	John Strong, "Concepts of Classical Optics", 1958, pp. 525-536.					
	AV#	Akira Imai et al., "Lens aberration measurement technique using attenuated phase-shifting mask", Device Development Center, Hitachi Ltd.					
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	AT+	Miyoko Noguchi et al., "Subhalf Micron Lithography System with Phase-Shifting Effect", <u>SPIE</u> , Vol. 1674, 1992, pp. 92-104.					
	AU+	N. Nomura et al., "Heterodyne Holographic Nanometer Alignment for a Wafer Stepper", <u>Microelectronic Engineering</u> 11, 1990, pp. 133-136.					
	AV+	Emi Tamechika et al., "Investigation of single sideband optical lithography using oblique incidence illumination", J. Vac. Sci. Technol. B, Nov/Dec 1992, pp. 3027-3031.					
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	AT♣	Keiichiro Tounai et al., "Resolution improvement with annular illumination", VLSI Development Division, NEC Corporation, 1992.					
	AU♣	H. Fukuda et al., "Characterization of Super-Resolution Photolithography", <u>IEEE</u> , 1992, pp. 3.2.1 - 3.2.4.					
	AV♣	Hiroshi Fukuda et al., "A New Pupil Filter for Annular Illumination in Optical Lithography", <u>Jpn. J. Appl. Phys.</u> , Vol. 31, 1992, pp 4126-4130.					
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AT♦	Maksymilian Pluta, "Principles and Basic Properties" <u>Advanced Light Microscopy</u> , Vol. 1, 1988, pp. 460-463.
AU♦	H. Wolfgang Zieler, "Physical Optical Aspects of Image Formation", <u>The Optical Performance of the Light Microscope</u> , 1974, pp. 32-55.
AV♦	

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	AR*	James R. Sheats et al., "Optical Lithography Modeling", <u>Microolithography Science and Technology</u> , Chapters 2-4, 1998, pp. 109-271.					
	AS*	Joseph W. Goodman, "Frequency Analysis of Optical Imaging Systems", <u>Introduction to Fourier Optics</u> , Chapter 6, 1968, pp. 101-197.					
	AT*	Maksymilian Pluta, "Specialized Methods", <u>Advanced Light Microscopy</u> , Vol. 2, 1989, pp. 100-113.					
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	AT◇	Satoru Asai, et al., "Improving projection lithography image illumination by using sources far from the optical axis", <u>J. Vac. Sci. Technol.</u> , Vol. 9, Nov/Dec 1991, pp. 2788-2791.
	AU◇	B. J. Lin, "Optical Methods for Fine Line Lithography", <u>Fine Line Lithography</u> , Chapter 2, 1980, pp. 107-232.
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	AA	4,497,015	1/85	Konno et al.	362	268	
	AB	4,952,815	8/90	Nishi	250	548	
	AC	5,307,207	4/94	Ichihara	367	259	
	AD	5,098,184	3/92	vanden Brandt et al.	353	38	
	AE	4,851,978	7/89	Ichihara	355	67	
	AF	5,153,773	10/92	Muraki et al.	362	268	
	AG	4,497,013	1/85	Ohta	362	268	
	AH	4,939,630	7/90	Kikuchi et al.	362	268	
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	AL	62-50811	10/87	JAPAN			partial
	AM	WO 92/03842	3/92	WIPO (abstract)			
	AN	61-91662	5/9/86	Japan			yes
	AO						
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OTHER (including author, title, date, pertinent pages, etc.)							
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	AA	4,918,583	4/90	Kudo et al.	362	268	
	AB	5,300,971	4/5/94	Kudo	355	67	
	AC	6,252,647	6/26/01	Shiraishi	355	53	
	AD	6,211,944	4/3/01	Shiraishi	355	53	
	AE	4,619,508	10/28/86	Shibuya et al.	355	67	
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	AG	4,974,919	12/4/90	Muraki et al.	362	268	
	AH	5,016,149	5/14/91	Tanaka	362	268	
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	AL	WO 88/08932	11/17/88	WIPO			
	AM	1,137,243	12/18/68	United Kingdom			
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	AB	4,476,519	10/09/84	Hayamizu	362	32	
	AC	4,275,288	06/23/81	Makosch et al.	219	121	
	AD	5,463,497	10/31/95	Muraki et al.	359	618	
	AE	4,241,389	12/23/80	Heimer	362	297	
	AF	4,547,037	10/15/85	Case	350	3.75	
	AG	4,389,701	01/21/83	Phillips	362	308	
	AH	4,585,315	04/29/86	Sincerbox et al.	350	525	
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	AM	56-12615	02/07/81	Japan			Abstract
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	AO	59-49514	03/22/84	Japan			Abstract
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